PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)	
MJS-**117-549**	**Confirmation No. 8669**

Application Number	Filed
10/540,255	December 8, 2005
First Named Inventor	
Hooley	
Art Unit	**Examiner**
2614	TRAN, Con, P.

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

☐ Applicant/Inventor

☐ Assignee of record of the entire interest. See 37 C.F.R. § 3.71. Statement under 37 C.F.R. § 3.73(b) is enclosed. (Form PTO/SB/96)

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Registration number if acting under 37 C.F.R. § 1,34 _____

/Michael J. Shea/
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May 6, 2011
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.*

☒ *Total of 1 form/s are submitted.

Independent claims 1, 37 and 48 of this application are directed to setting-up a loudspeaker system. The setting-up involves, among other things, emitting directional beams of set-up sound signals from the loudspeaker system into a room, registering at least one reflection of the emitted signals at one or more locations within the room, and evaluating the registered reflected signals to obtain data for use in configuring the loudspeaker system.

Applicant respectfully traverses the rejection of these independent claims under 35 U.S.C. Section 102(b) as allegedly being "anticipated" by Hooley et al. (WO 01/23104) for at least two reasons.

First, the office action allegedly finds the elements of the claims in various different "aspects" of Hooley et al. However, the alleged disclosure of each element in a reference is not enough. The Federal Circuit has long held that "[a]nticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim." *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983) (emphasis added). Unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. Section 102.

Second, even if the various "aspects" of Hooley et al. are considered, the reference fails to disclose the concepts set forth in these claims.

Hooley et al. discloses ten separate "aspects" of the invention described therein. The rejection of the independent claims is based on proposed combinations of portions of the second, third and fourth aspects – these proposed combinations not being ones described or contemplated within the Hooley et al. document itself.

The second aspect is all about directing "anti-sound" (see line 9 of page 34). The purpose of directing anti-sound is to create quiet spots in the sound field. This is illustrated in Figures 17 and 18. In Figure 17, a conventional loudspeaker 1702 is used to produce a sound field, shown by the dashed ellipse. The DPAA (Digital Phased-Array Antennae) 105 can be used to focus "anti-sound" at position P. "Focusing" refers to emitting sound from each of the individual speakers of the DPAA 105 with a delay such that the sound from each speaker arrives at position P at the same time. For all other areas within the dashed line, the sound will arrive at

different times, and thus partially cancel itself out. Only at position P is the full (anti-sound) signal from the DPAA 105 achieved. As described in Figure 17 and the accompanying description, the signal output by the DPAA is the inverse of the signal that is calculated to come from the conventional loudspeaker 1702 at position P. Accordingly, a quiet spot is created in position P in an otherwise noisy sound field.

Figure 18 shows the same effect, only the sound field shown by the dashed line is additionally created by the DPAA 105. This is possible due to the linear nature of the sound system.

A particular application of creating these quite spots is to prevent "howlround" when using a microphone. This phenomenon occurs when a performer uses a microphone and the signal from the microphone is amplified by a loudspeaker. If the signal output by the loudspeaker reaches the microphone, positive feedback can be created until the system saturates, creating a loud high pitched tone. To reduce howlround, a quiet spot is created in the vicinity of the microphone by directing anti-sound toward the microphone. This is shown in Figure 20. There is a further advantage in that the microphone 2004 can be used to record the sound level at the position of the microphone, thereby making it easy to calculate the inverse sound that needs to be focused at the microphone position.

Accordingly, this part of the second aspect is concerned with preventing the speaker output from reaching the microphone. It discloses creating a quiet spot around the microphone and it achieves this by directing an output null to the microphone position (see lines 9-13 of page 35). The second aspect does not relate to the claimed set-up of a loudspeaker system in which directional beams of set-up sound signals are emitted from the loudspeaker system into a room, at least one reflection of the emitted signals is registered at one or more locations within the room, and the registered reflected signals are evaluated to obtain data for use in configuring the loudspeaker system.

Page 40, line 28 et seq. disclose that "[t]he apparatus of Figure 20 and Figure 18 may be combined such that the input signal detected at the microphone (2004) is generally output by the transducers (104) of the DPAA but with cancellation of this output signal at the location of the microphone itself." Thus, in this case, a performer uses the microphone and the signal is output by the DPAA. The DPAA focuses a null at the microphone position so as to prevent howlround.

It will be appreciated from reading pages 34 to 41 of Hooley et al. that the second aspect of the invention discloses using a microphone only to monitor the sound level at a particular position so that an output null can be directed at that position. When an output null is directed at the position, the spot where the microphone is remains quiet. Accordingly, no sound, or very little sound, from the DPAA reaches the microphone in the second aspect of the invention.

The third aspect of Hooley et al. involves recreating a surround sound effect using a single loudspeaker system. As shown in Figure 21, reflective surfaces can be used to re-direct sound to a user from a variety of directions. The DPAA is used to beam sounds towards the reflective surfaces and the sounds are reflected back to the user to create a surround sound experience.

Lines 12-19 of page 43 disclose a very specific combination of the third aspect with the second aspect "to provide that anti-beams of the other channels may be directed towards the reflector associated with a given channel." In other words, if channel 1 is focused at reflector 1 and channel 2 is focused at reflector 2, then anti-beams are also focused so that channel 1 is nulled at reflector 2 and channel 2 is nulled at reflector 1.

Accordingly, when lines 12-19 of page 43 talk about combining the second and third aspects, they are talking about including the nulling of the second aspect with the surround sound system of the third aspect so that all channels other than the desired channels are nulled. Among other things, such nulling does <u>not</u> involve the use of a microphone because it is not solving the "howlround" problem that is additionally described as part of the second aspect.

The fourth aspect of Hooley et al. discloses a way to locate the position of a microphone. As shown in Figure 22, test signals can be output by several ones of the speakers of the DPAA and these test signals travel directly to the microphone. Known algorithms of triangulation can then be used to track the location of the microphone, based on the length of time it takes for the test signals to reach the microphone from the DPAA.

Accordingly, in the fourth aspect, test signals are output by the DPAA and are received directly at the microphone. It is important that the test signals <u>do not undergo any reflections</u>, otherwise the signal path to the microphone from the DPAA will not be a true signal path and the microphone position will not be correctly calculated.

Line 29 of page 44 to line 8 of page 45 discloses how a model of the environment in which the DPAA is situated can be built up so as to optimize the sound at the position of the microphone. At lines 9-15 of page 45 there is discussion of how nulling (second aspect) can be directed to the microphone position.

Accordingly, this section of Hooley et al. discloses using test signals to locate the position of the microphone (fourth aspect) and then sending a null beam to that position to prevent howlround (second aspect).

Lines 9-15 of page 45 also disclose sending null beams towards the reflecting surfaces. No microphone is needed. Accordingly, this fourth aspect of the invention discloses preventing sound from reaching the reflective surfaces. This fourth aspect of Hooley et al. therefore works in the opposite way to the third aspect of the invention.

The only combination of the third and fourth aspects disclosed in Hooley et al. is from line 29 of page 46 to line 9 of page 47. Here it is disclosed how the surround sound system of the third aspect may be set up. There is disclosed the positioning of a microphone at or near the reflective surface and then the use of the fourth aspect to triangulate the position of the microphone. The control system can then be used to compute the array parameters to locate the directed beam at that position during playback. Of course, during playback, the microphone is removed. The microphone is only used to initially establish the position of the reflecting surfaces.

According to this disclosure, direct test signals are output from certain ones of the DPAA to triangulate the position of the microphone. That position is then deemed to be the position of one of the reflectors. The microphone is thereafter removed (see lines 7 and 8 of page 47) and focused beams of sound are directed towards the reflective surface (where the microphone was) in order to provide the surround sound effect of the third aspect.

The idea that a microphone can be used to detect reflected signals and that these signals can themselves be used to determine the reflective surfaces is new and is not at all disclosed by any of the "aspects" of Hooley et al., nor by any of the combinations of the aspects mentioned in Hooley et al. Although the fourth aspect of Hooley et al. discloses emitting test signals and registering the directly received test signals at a microphone, there is no disclosure of emitting directional beams (in Figure 22 one transducer only is used to emit each test signal) and there is

no disclosure of registering at least one reflection (in Figure 22, only the direct sound is registered and indeed no reflective surfaces are shown in Figure 22).

Consequently, none of the aspects of Hooley et al. anticipate the subject matter of the independent claims which are directed to the set-up of a loudspeaker system that involves, among other things, emitting directional beams of set-up sound signals from the loudspeaker system into a room, registering at least one reflection of the emitted signals at one or more locations within the room, and evaluating the registered reflected signals to obtain data for use in configuring the surround sound system.

In particular, the fourth aspect of Hooley et al. discloses emitting test signals from individual transducers. Accordingly, no directed beams of sound are produced (generally, to get directional beams, more than one transducer must be used for the same signal). Furthermore, as shown in Figure 22, the test signals are directly received at the microphone. Accordingly, no reflections are registered. In the third aspect, a microphone is used only to establish the position of the reflecting surfaces, and the test signals of the fourth aspect are used for this purpose. Accordingly, no directed beams of sound are picked up by the microphone in either the third or fourth aspect. In the second aspect the sound from the microphone is inverted and is directed back to the microphone to create a quiet spot. However, this directed sound travels directly to the microphone and is never reflected.

Accordingly, no one of the second, third or fourth aspects of Hooley et al. (nor any of the combinations of these aspects specified in Hooley et al.) disclose emitting a directional beam of set up sound signals and registering at least one reflection of the emitted signals. Hooley et al. at best discloses use of a microphone only to register directly received, not reflected, signals.

Elko (US 6,041,127) and Lavoie et al. (U.S. Patent Publication No. 2001/0038702) are relied upon in combination with Hooley et al. to reject certain dependent claims. However, these documents do not remedy the deficiencies of Hooley et al. with respect to the independent claims. Consequently, even in combination, these references would be deficient with respect to the claimed subject matter.

For at least these reasons, withdrawal of the rejection is respectfully requested.